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A Cultural Resources Survey Of The BP-Fletcher No.1 Proposed 4.4-Acre Well Pad, 1.5-Acre Well Pad, And 2.4-Mile Pipeline Project, Within Village Greek State Park, Hardin County, Texas

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A CULTURAL RESOURCES SURVEY OF THE BP – FLETCHER NO. 1 PROPOSED 4.4-ACRE WELL PAD, 1.5-ACRE WELL PAD, AND 2.4-MILE PIPELINE PROJECT, WITHIN VILLAGE CREEK STATE PARK, HARDIN COUNTY, TEXAS

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ABSTRACT

Perennial Environmental Services, LLC (Perennial), on behalf of Upstream Exploration, LLC (Upstream) conducted an intensive cultural resources survey of the BP – Fletcher No. 1 well pads and pipeline Project (Project) located east of Lumberton, Texas on the recently acquired Hancock Tract within the Village Creek State Park. The Project will include vegetation clearing, equipment staging as well as construction and installation of an approximately 4.4-acre pad site, 1.5-acre pad site, and a 3.8-kilometer- (km-) (2.4-mile- [mi-]) long 10.2-centimeter- (cm-) 4.0-inch- [in.-]) diameter pipeline. The pipeline portion of the Project will run adjacent to an unnamed road that bisects the Hancock property from west to east approximately 2.7 km (1.7 mi) to the east of Alma Drive. The two pad sites are located at either terminus of the pipeline and average approximately 1.5 acres and 4.4 acres in size. The 3.8-km- (2.4-mi-) long pipeline will be installed within an approximately 6.9-meter-(m-) (20.0-foot- [ft.-]) wide permanent corridor with temporary workspace extending up to a 15.2-m- (50-ft.-) wide corridor in some areas (14.2 acres). In all, the Area of Potential Effect (APE) for the Project totals 20.5 acres, with depths of impacts ranging from 1.2 to1.8 m (4.0 to 6.0 ft.). Abby Peyton served as Principal Investigator for the Project, Jennifer Cochran served as Project Archeologist, and Chris Shelton, Amy Goldstein, and Kirsten Atwood conducted the fieldwork on January 27-29, 2016.

The Project is located on property owned by the Texas Parks and Wildlife Department (TPWD), a political subdivision of the State of Texas. As such, the property falls under the jurisdiction of the Antiquities Code of Texas (ACT). A cultural resources assessment was necessary within the Project in order to satisfy requirements of the ACT. The purpose of the survey was to identify any prehistoric and historic-age archaeological sites located within the APE and evaluate their significance and eligibility for designation as a State Antiquities Landmark (SAL). The cultural resources investigations were conducted under Texas Antiquities Committee (TAC) Permit No. 7499.

In all, a total of 144 shovel tests and 7 bucket auger tests were excavated across the Project. Shovel tests revealed diverse soil textures, such as silty clay loam, sandy loam, loamy sand, and sandy clay. Auger testing was terminated upon reaching compact clay or the presence of the water table at 110.0-175.0 cm (43.0-69.0 in.) below ground surface. No evidence of any cultural resources was observed along the modern ground surface or within any of the shovel tests or bucket augers excavated within the Project.

Previously recorded site 41HN59, a historic-age site consisting of a historic-age trash scatter, was observed approximately 6.1 m (20.0 ft.) west of the proposed pipeline right-of-way (ROW). The ground surface was thoroughly inspected and shovel tests were excavated at 30.0-m (98.4-ft.) intervals along the Project area near site 41HN59. No evidence of site 41HN59 was observed along the modern ground surface within any of the shovel tests excavated in this area.

Based on the results of the survey effort, no intact, significant cultural resources will be affected by any construction activities within the Project area. In accordance with the ACT, Perennial recommends no further cultural resources investigations within the 20.5-acre Project area.

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INTRODUCTION

Perennial Environmental Services, LLC (Perennial), on behalf of Upstream Exploration Houston, LLC (Upstream) conducted an intensive cultural resources survey of the BP – Fletcher No. 1 well pads and pipeline right-of-way (ROW) Project (Project) located east of Lumberton, Texas on the recently acquired Hancock Tract within the Village Creek State Park (Figures 1 and 2). The Project will include vegetation clearing, equipment staging as well as construction and installation of the approximately 4.4-acre pad site, 1.5-acre pad site, and a 3.8-kilometer- (km-) (2.4-mile- [mi-]) long 10.2-centimeter- (cm-) (4.0-inch- [in.-]) diameter ROW. The pipeline ROW will run adjacent to an unnamed road that bisects the Hancock property from west to east approximately 2.7 km (1.7 mi) to the east of Alma Drive. The two pad sites are located at either terminus of the pipeline ROW and measure 1.5 acres and 4.4 acres in size. The 3.8-km- (2.4-mi-) long pipeline ROW will be installed within an approximately 6.9-meter- (m-) (20.0-foot [ft.-]) wide permanent corridor with temporary workspace extending up to a 15.2-m- (50-ft.-) wide corridor in some areas (14.2 acres). In all, the Area of Potential Effect (APE) for the Project totals 20.5 acres, with depths of impacts ranging from 1.2 to1.8 m (4.0 to 6.0 ft.). Abby Peyton served as Principal Investigator for the Project, Jennifer Cochran served as Project Archeologist, and Chris Shelton, Amy Goldstein, and Kirsten Atwood conducted the fieldwork on January 27-29, 2016.

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PROJECT AREA DESCRIPTION

ENVIRONMENTAL SETTING

Village Creek State Park consists of 2,500-acre primary park area located within the East Texas Piney woods region along the southeastern coast of Texas. The Project is located near the central portion of the recently acquired Handcock property. TPWD (2016) has delineated this area as seasonally inundated forested shrub wetlands with native vegetation. However, the Project area traverses a section of the Village Creek State Park Hancock Plantations containing cultivated loblolly pine. Trees such as sweetgum, magnolia, tupelo, water oak, and several species of oaks, elms and ashes characterize the bottomland hardwood forests and swamps in this area (Blair 1950).

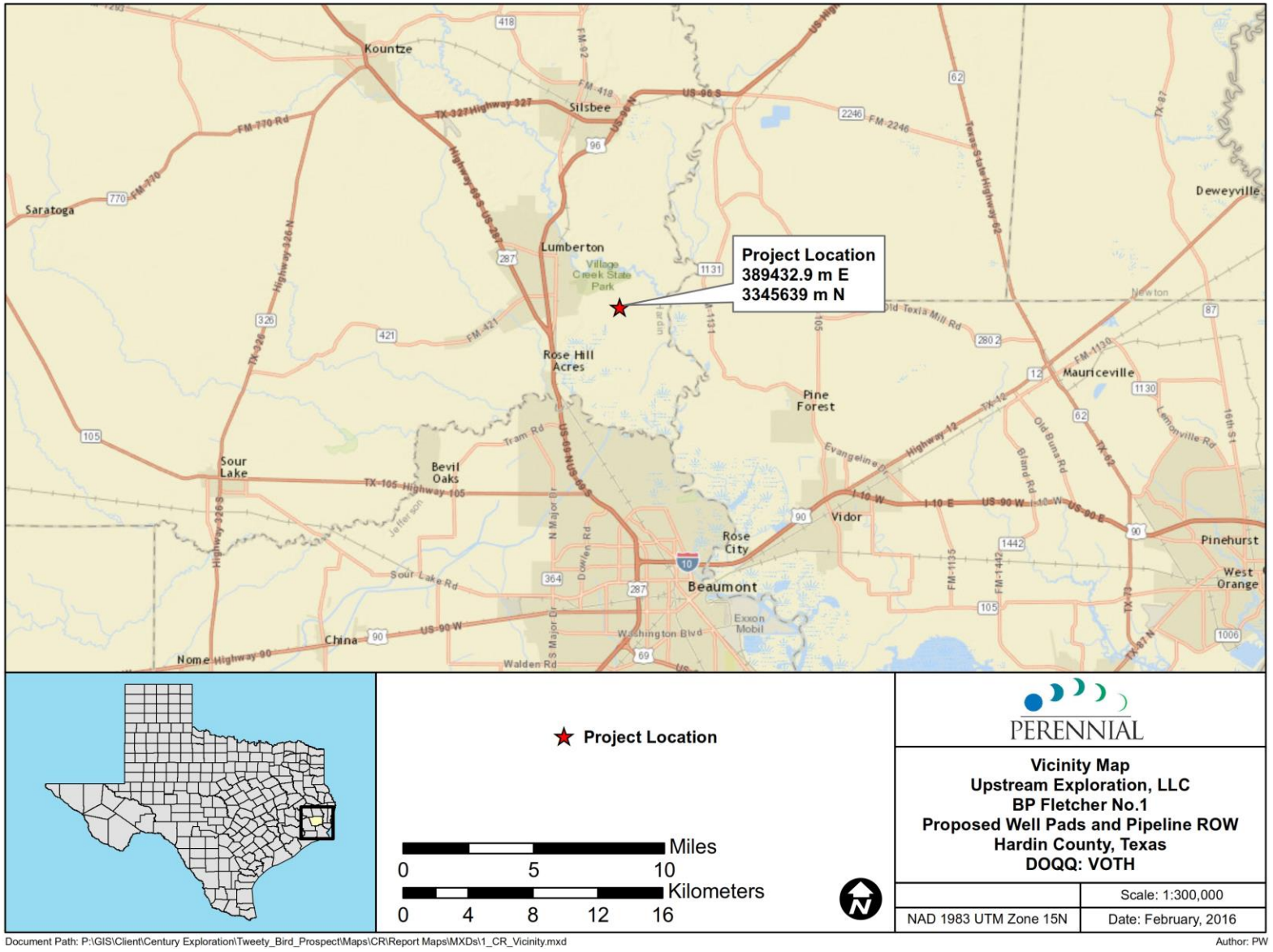

Figure 1. Project vicinity map.

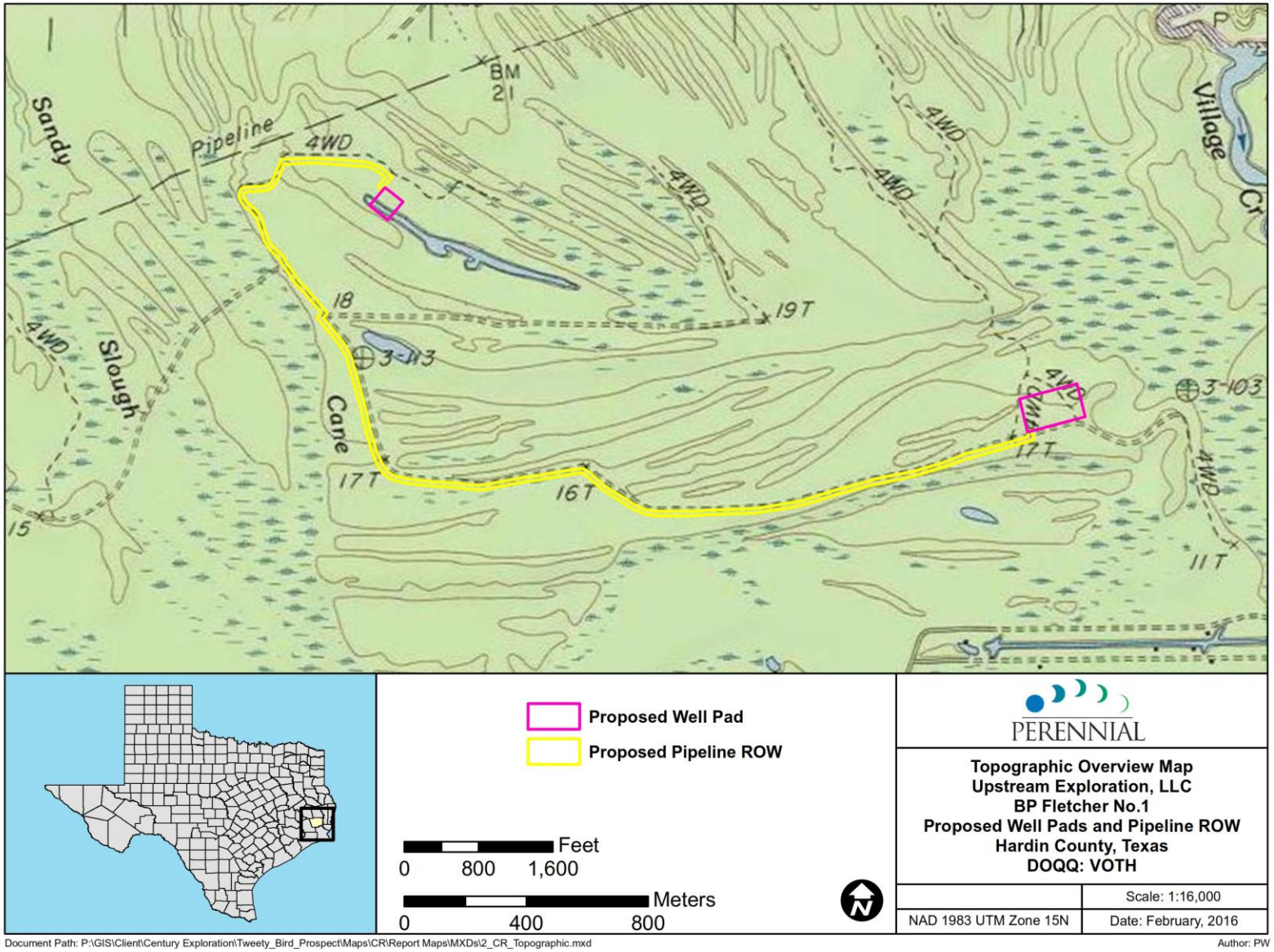

Figure 2. Topographic overview of Project area.

Landscape alterations caused by repeated logging and the effects of Hurricane Rita have disturbed the natural cycle of fire and allowed the proliferation of dense understory and midstory components (Sparks and McMakin 2000).

The Project is located approximately 1.1 km (0.7 mi) to the west of the confluence of Village Creek and the Neches River in a heavily wooded setting traversed by numerous waterways, sloughs, and large expanses of lowland wetlands. The western portion of the Project is situated within a recently cleared portion of land being utilized for the Village Creek State Park Longleaf Pine Restoration Project. The central portion of the Project area follows an unnamed road that bisects the Handcock property in an east to west orientation. The eastern portion of the Project area lies within a heavily wooded area consisting of rows of mature planted pines with a dense understory. Additionally, a channelized canal parallels Winfield Road to the south of the Project Area, and eventually converges with the Neches River. Several modern residences are present along Winfield Road to the south.

GEOLOGY AND SOILS

Geologically, the Project is underlain by the Deweyville Formation (Qal) consisting of alluvial and low terrace deposits along streams (USGS 2016). The topographic features that have formed by this deposition process include point bars, natural levees, abandoned stream channels, swales, back swamps and relict meanders, such as Mandy Lake located to the east of the Project, which exhibit larger radius curvature than the current course of the Neches River (USGS 2016). Elevations across the Project area range from 4.6 to 6.1 m (15.0 to 20.0 ft.) above mean sea level (amsl). Two soil types are mapped within the Project area, and these soil series are associated with sloughs and floodplains. These include Belose-Caneyhead complex, 0 to 1 percent slopes (BemA) and Votaw fine sand, 0 to 1 percent slopes (VtaA). The Belrose series consists of very deep, moderately well-drained, moderately permeable soils that formed in loamy alluvium of Quarternary age. These nearly level to very gently sloping soils are on terrace risers of river valleys. The Caneyhead series consists of very deep, very poorly-drained soils. These depressional soils formed in loamy alluvium of Quarternary age. Slope ranges from 0 to 1 percent slope but mainly less than 0.5 percent. The Votaw series consists of very deep, moderately well-drained soils. These soils formed in sandy alluvium on nearly level to very gently sloping terraces of the Pleistocene age (NRCS 2016).

METHODS

BACKGROUND REVIEW

Prior to initiating fieldwork, Perennial conducted a records and literature review of the Texas Historical Commission (THC)'s Texas Archeological Sites Atlas (Atlas) online database and the National Register of Historic Places (NRHP) database to identify previously recorded cultural resource sites, historic structures, properties listed on the NRHP, designated historic districts, or designation as SALs which could potentially be affected by the proposed Project. Any previously recorded cultural resource site forms, reports of archaeological investigations, general historical documents, and secondary sources concerning the background of the area were reviewed. The records search included a review of all previously recorded site forms and surveys on file within a 1.6-km (1.0-mi) review radius of the Project.

In addition to a records and literature search, archeologists gathered information from secondary sources concerning the prehistoric and historic background of the area. Documents associated with the history of the area were used to model prehistoric and historic settlement patterns in relation to the landscape and terrain characteristics as well as cultural patterns and regional trends. National Resources Conversation Service (NRCS) soil data, the US Geological Survey (USGS) Voth, Texas 7.5-minute topographic quadrangle, aerial photographs, and contemporary geologic and physiographic features were also examined. Additionally, a Perennial archeologist also contacted Aina Dodge, TPWD Archaeology Lab Director, in order to gather any additional information regarding cultural resources located within the Village Creek State Park boundaries that may not be present on the Atlas.

FIELD METHODS

The cultural resources survey was performed by a team of three archeologists supervised by a Project Archeologist, with logistical and technical support provided by the Principal Investigator. Perennial's investigations consisted of an intensive pedestrian survey, shovel testing efforts, and bucket augering at select locations. The field crew surveyed the entirety of the Project area, including the two pad sites and the 3.8-km- (2.4-mi-) long pipeline. For the area survey of the pad sites, shovel tests were excavated on a 30.0-m (98.4-ft.) grid pattern roughly equating to five to seven shovel tests per acre. For the 15.2-m- (50.0-ft.-) wide survey corridor of the pipeline, shovel tests were excavated along one transect with shovel tests spaced approximately at 30.0 to 50.0-m (98.4 to 164.0-ft.) intervals along the corridor. Additional shovel tests were excavated along portions of the Project area with distinct landforms. Additionally, in order to inspect deep sediments below 1.0 m (3.3 ft.), a hand auger was utilized at select locations to probe and examine the potential for deeply buried cultural deposits. Any deviations from these survey standards were thoroughly documented and disturbances were photographed.

In general, shovel tests measured approximately 30.0 cm (11.8 in.) in diameter and were excavated to a maximum depth of 1.0 m (3.3 ft.). In some cases, shovel tests were terminated at shallower depths due to the presence of the water table or basal clays encountered within the shovel tests. The matrix from each shovel test was screened through 6.0-milimeter (mm) [0.25-in.] mesh. If dense, clays were encountered and could not be successfully screened, the clay matrix was trowel-sorted and visually inspected. For each shovel test, Perennial recorded the following information on standardized shovel test forms: location, maximum depth, and the number of soil strata. For each soil stratum, thickness, texture, color, and the presence or absence and nature of cultural materials were recorded. Each shovel test was given an identifier number with the corresponding archeologist's initials. Additional information such as level number, inclusions, and reason for termination was also documented on each shovel test log form. During field survey, the archeologist was equipped with a handheld sub-meter GeoXT Trimble Global Positioning System (GPS) device, topographic maps and aerial photographs of the workspace, a digital camera, as well as shovel test and photographic logs, and daily journal forms.

In addition to shovel testing, a hand-operated bucket auger with bucket diameter measuring a 11.4 cm (4.5 in.) in size was utilized in select locales to probe for deeply buried cultural materials below shovel testing capabilities (i.e., 1.0 m [3.3 ft.]). If the auger probes revealed that buried horizons or evidence of cultural materials were present at depths below shovel testing capabilities, then additional work in the form of backhoe trenching would have been utilized to adequately assess

these deposits. However, the auger testing revealed that deep alluvium containing cultural deposits was not present within any portions of the Project area. As such, additional investigations in the form of mechanical trenching are not recommended for any portions of the Project.

The Texas State Minimum Archeological Survey Standards (TSMASS) require a minimum of 16 shovel tests per 1.6 km (1.0 mi) for linear survey corridors measuring up to 30.5 m (100.0 ft.) in width. Additionally, for area surveys, the TSMASS require a minimum of three shovel tests per 1.0 acre for areas measuring 2.0 acres or less in size and two shovel tests per 1.0 acre for survey areas between 2.0 and 10.0 acres in size. In areas where disturbances precluded the need for shovel tests, photographs with corresponding GPS waypoints were taken. As such, a minimum of 51 shovel tests were required within the Project area. Perennial exceeded the minimum shovel test number by excavating 144 shovel tests and 7 bucket augers within the Project area.

Based on the confines of a Project area, the scope of work defined a cultural resource site as a discrete area within the Project containing five or more artifacts that are at least 50 years in age. Any cultural resource feature, regardless of the presence of associated artifacts, would also be defined as a site. Furthermore, any remnant historic resources, regardless of quantity, potentially associated with important events in the past would also be identified as a site. Singular artifacts would be recorded as isolated finds following stringent delineation efforts.

RESULTS

BACKGROUND REVIEW

Background research conducted at the THC's Atlas website indicated that seven previously recorded sites are located within a 1.6-km (1.0-mi) review radius of the Project area (Figure 3). Of the seven previously recorded sites, one site (41HN59) is mapped immediately adjacent to the Project (Figure 3). These seven sites were recorded during two previously conducted surveys within the vicinity of the Project area. A discussion of all seven previously recorded sites and surveys within a 1.6-km (1.0-mi) review radius is presented below.

According to the Atlas, the Project area was partially surveyed by Dixie Environmental Services Company (DESCO) in 2012 as a part of the Rivers Edge 3-D Seismic Project. DESCO archeologists excavated shovel tests within low, moderate and high probability areas wherever source points would be located, but did not walk transects across the entire project area (Baxter 2012). Several shovel and auger tests appear on the DESCO maps immediately adjacent to several portions of the Project Area, yet they do not represent systematic coverage for this area. One historic (41HN53) and three prehistoric sites (41HN54, 41HN55, and 41HN56) were recorded near the Project area during this survey.

In addition to the DESCO survey, a well pad and access road survey conducted in 2010 by Moore Archeological Consulting, Inc for Choice Exploration provides additional survey coverage along the western terminus of the Project. Sixteen shovel tests were performed within the 3.95-acre project area, all of which were negative for cultural materials (Mangum and Moore 2010).

IMAGE INTENTIONALLY OMITTED

SENSITIVE SITE LOCATION DATA

Figure 3. Previously recorded sites within a 1.6-km (1.0-mi) review radius of the Project

The 178.0-acre Village Creek Longleaf Restoration Project was surveyed by TPWD staff in August of 2013 before native long leaf pine planting would be allowed to take place to restore the environment of the formerly non-native and commercially-logged pine and eucalyptus plantation (Strutt 2013). This survey project provides additional survey data for the western half of the current proposed Project area. The survey involved 20 shovel tests and three mechanical trenches placed within previously determined high probability areas. All shovel tests and mechanical trenches were negative for cultural materials. However, subsequent shovel testing and pedestrian surveys following the ground clearing stages in the restoration project resulted in the documentation of one prehistoric site (41HN57), and 2 historic sites (41HN58 and 41HN59) (Mathews 2014).

Site 41HN53 is listed on the atlas as an engineered feature comprised of the canals and dredge spoil created by the early twentieth century lumber industry in Hardin County. These elements are believed to have been excavated to provide a means of egress for equipment involved in logging within swampy areas to the west of the Neches River (Atlas 2016). The logging process involved steam and donkey-powered winches mounted to flat-bottomed barges known as scows that used steel cables to snake logs out of swampy areas, which were then tied together and rafted to a lumber mill along the Neches River (Atlas 2016). The site boundary, determined by ground observations and aerial interpretation, is located to the southeast of the seismic project boundary and 1.3 km (0.8 mi) to the southeast of the current Project.

Site 41HN54 is located on an alluvial terrace above a low swampy area approximately 0.3 km (0.20 mi) to the northwest of the proposed Project. This site consists of only two tertiary flakes recovered from two separate shovel tests at 30.0 to 40.0 cm (11.8 to 15.7 in) and 60.0 to 70.0 cm (23.6 to 27.6 in) below ground surface (Atlas 2016). No other cultural materials were identified, and the site was determined to be not eligible for inclusion in the NRHP.

Site 41HN55 is situated on a low alluvial terrace overlooking Mandy Lake approximately 0.35 km (0.22 mi) to the southeast of the proposed Project. This Late Prehistoric site consisted of one primary flake recovered from 40.0 to 50.0 cm (15.7 to 19.7 in.) below ground surface and an Alba point base recorded at 30.0 to 40.0 cm (11.8 to 15.7 in.) below surface (Atlas 2016). Ten shovel tests were excavated to determine the site boundaries, only two of which contained cultural materials. Based on the results of this survey effort, the site was recommended as not eligible for inclusion in the NRHP. However, the site recorders noted that site 41HN55 may represent an extension of site 41HN56 located to the north (Baxter 2012). Additional testing between sites 41HN55 and 41HN56 are needed in order to make the connection between these two sites.

Site 41HN56 is a multicomponent prehistoric artifact scatter dating from the Early Ceramic to Late Prehistoric period (Baxter 2012). Site 41HN56 is located approximately 96.0 m (314.9 ft.) north of site 41HN55, and 0.3 km (0.2 mi) east of the Project area on a low alluvial terrace overlooking Mandy Lake. Artifacts including 2 rim sherds, 15 body sherds, 4 basal sherds, 7 sherdlets, 5 pieces of baked clay, 5 secondary flakes and 5 tertiary flakes, as well as five specimens of charcoal were recovered from five positive shovel tests (Baxter 2012). Twelve shovel tests were excavated in a 10.0-m (32.8-ft.) grid pattern oriented along the landform. Surficial disturbances included logging activities, two push piles, a two-track road and a borrow pit. Subsurface disturbances were not nearly as extensive. Based on the vertical distribution of ceramic artifacts, DESCO determined

that two distinct, stratified components are represented. The earlier component (60.0 to 70.0 cm [23.6 to 27.6 in.] below surface) is characterized by fine sandy paste plain and decorated Goose Creek wares dating to approximately ca. 2,500-2,000 years ago. The later stratum (20.0 to 40.0 cm [7.8 to 15.7 in.] below surface) contained both variations of grog-tempered Baytown Plain and likely dates from ca. 2,000-1,500 years ago. Ceramic analysis was completed by Timothy K. Pertulla, and his multicomponent determinations were supported by the presence of a possible A horizon from 55.0 to 70.0 cm (21.7 to 27.6 in.) below surface in shovel test two, as well as the vertical provenience of the flakes, charcoal and baked clay (Baxter 2012). The field crew also performed deep auger testing, and Pleistocene-age clay was encountered at 110.0 cm (43.3 in.) below surface. Additional testing investigations were recommended to formally assess the site for designation as a SAL.

Site 41HN57 represents a prehistoric artifact scatter approximately 10.0 m (32.8 ft.) to the west of Cane Slough (Atlas 2016). The site is located 0.2 km (0.1 mi) to the southwest of the Project area. Site 41HN57 was recorded during a pedestrian survey, so no subsurface investigations were conducted. Several grog-tempered coil-made ceramic sherds and chert lithic debitage were observed along the modern ground surface. The site is located within an area that has been heavily disturbed through repeated bulldozing and landscape altering events. However, the potential exists for buried cultural deposits beyond the investigated potions of the site. Additionally, Mathews (2014) notes that the prehistoric ceramic type identified on 41HN57 differs from the ceramic types currently identified within the Big Thicket. Additional testing is needed within uninvestigated portions of the site and may provide important contributions with regards to prehistoric ceramic typology within the Big Thicket.

Site 41HN58 appears to represent an early twentieth century log landing site. The TPWD staff originally recorded this site during the Choice Exploration Damage Restitution and Reforestation Project (Mathews 2014). Site 41HN58 is located approximately 68.0 m (223.4 ft.) to the east of the Project Area. The site is situated is a heavily disturbed setting as a result of pine plantation practices of the early twentieth century. Artifacts present include a mule shoe, root rake tong, several unidentified metal objects, concrete culvert fragments, and a segment of roofing tin. No features or structures were observed with the site. Based upon the location of site 41HN58 within an extensively modified and disturbed landscape, the site was recommended as not eligible for inclusion in the NRHP, and no further work was recommended on the site.

Site 41HN59 represents a heavily disturbed refuse deposit that dates from the mid to late twentieth century. The TPWD staff also recorded this site during the Choice Exploration Damage Restitution and Reforestation Project. This site encompasses approximately 1.4 acres and is situated 6.1 m (20.0 ft.) southwest from the Project area. Mathews (2013) indicated that the site is almost completely destroyed as a result of extensive bulldozing activities. Based upon the heavily disturbed deposits, the site was recommended as not eligible for inclusion in the NRHP, and no additional work is needed on the site.

No additional sites are mapped within a 1.6-km (1.0-mi) radius of the Project, however six additional surveys have been conducted that fall within a 1.6-km (1.0-mi) radius but beyond the boundaries of the current Project area. Five of these previously conducted surveys have taken place within the original boundary of Village Creek State Park since the land was acquired by the

state of Texas in 1979, while the sixth previous survey was conducted on the Handcock property approximately 0.6 km (0.4 mi) south of the current Project. All previous surveys, except one, yielded negative results (Atlas 2016).

In 1984, Steven M. Kotter surveyed a 1.9-km (1.2-mi) seismic line within the original bounds of the state park. This effort consisted of pedestrian survey of source points and access routes with shovel testing in areas of poor surface visibility (Kotter 1984). The state park Master Plan produced in 1989 describes a reconnaissance project wherein shovel testing and mechanical scraping was concentrated within the three percent of the original park acreage above the 7.6-m (25.0-ft.) topographic contour line (Ralph 1989). In November 1991, Brazos Valley Research Associates conducted a 2.0-km (1.3-mi) seismic line project with shovel testing at stream crossings and randomly placed along the proposed route (Moore 1991). The May 1993 archaeological efforts with the Texas A&M University Archaeological Research Laboratory included the excavation of 50.0 x 50.0-cm (19.7 x 19.7-in.) test pits at five locales within the park to be impacted by proposed utility construction (Hartman 1993). One of these locations was a historic structure with an associated mid-twentieth century artifact scatter. The field crew found no evidence dating earlier than the twentieth century and no criteria to deem the structure significant and eligible for inclusion in the National Register. In 2008, TPWD contracted with Ecological Communications Corporation (EComm) to complete a pedestrian survey project of the entire 1,090-acre main state park area. This project involved systematic shovel testing and pedestrian survey along 30.0-m (98.4-ft.) interval transects, resulting in 507 negative shovel tests (Feit et al. 2008). In 2014, Perennial Environmental Services, LLC (Perennial) conducted a cultural resource assessment of an 8.95-acre well pad site located approximately 0.6 km (0.4 mi) to the south of the Project area. A total of 25 shovel tests and three hand auger tests were excavated within the well pad site, all of which were negative for cultural resources (Overfield and Noble 2014).

FIELD SURVEY

From January 26-29, 2016, a three-person field crew carried out an intensive surface and subsurface cultural resources investigation within the Project area. Vegetation along the Project area is characterized by medium- to tall-height native grasses, pine and mixed hardwood forest, freshwater forested/shrub wetland, and multiple sloughs. A total of 144 shovel test and 7 bucket augers were excavated across the whole Project area. No cultural resources were observed along the modern ground surface or within any of the shovel test and bucket augers excavated within the Project. For discussion purposes, the two proposed well pads and pipeline ROW are discussed separately below.

Western Well Pad Site

This well pad is located at the western terminus of the Project area (See Appendix A). The overall dimensions of the proposed well pad measure approximately 77.7 x 77.7 m (255.0 x 255.0 ft.), totaling 1.5 acres in size. The western pad is situated immediately adjacent to the southwest edge of the existing Choice Exploration well pad. Vegetation surrounding the proposed western well pad location consists of medium-to tall-height grasses with ground surface visibility ranging from 20 to 80 percent (Figures 4 and 5). The central portion of the proposed well pad location consisted of a low-lying area with standing water present at the time of the survey (Figure 6).

Shovel tests were excavated at approximately 30.0-m (98.4-ft.) intervals apart in a grid formation with shovel tests inset approximately 3.0 to 10.0 m (3.3 to 32.8 ft.) along the edges of the proposed well pad. The shovel tests were inset the greatest distance (10.0 m [32.8 ft.]) along the northeastern portion of the proposed well pad due to disturbance from the existing Choice Exploration well pad construction. Seven shovel tests placed across three transects were excavated within the proposed western well pad location, all of which were negative for cultural materials. Three shovel tests were located within each transect with the exception of the central transect which only contained one shovel test due to the remaining portions of this transect being inundated at the time of the survey. No cultural resources were observed along the surface or within any of the seven shovel tests excavated within the proposed western well pad location. In general, shovel tests revealed light gray to yellowish-brown sand over lying sandy clay. In most cases, the water table was encountered between 20.0 and 70.0 cm (7.9 and 27.6 in.) below ground surface.

Additionally, one bucket auger (BA-1) was excavated within the proposed western well pad location to examine the potential for deeply buried cultural deposits. Specifically, soils within BA-1 exhibited the following soil profile: Stratum I (0-5 cm) consisted of brown (10YR 5/3) saturated sand with 10 percent reddish-yellow (7.5YR 6/8) mottling present. Stratum II (5-15 cm) revealed a light gray (10YR 5/1) loamy sand with 30 percent redox features (2.5YR 4/8 and 10 YR 5/8) present. Stratum III (70-155 cm) revealed a light gray (5Y 7/1) sandy clay with 30 percent redox features (2.5YR 4/8 and 10 YR 6/6) present. Stratum II (5-15 cm) revealed a light gray (10YR 5/1) loamy sand with 30 percent redoximorphic features (2.5YR 4/8 and 10 YR 5/8) present. Stratum III (70-155 cm) revealed a light gray (5Y 7/1) sandy clay with 30 percent redoximorphic features (2.5YR 4/8 and 10 YR 6/6) present. The results of the bucket auger revealed saturated loamy sand overlying the water table.

Based on available NRCS (2016) soil data, the mapped A horizon in this location extends to a depth of only 13.0 cm (5.0 in.) below surface in this area. Additionally, there is no evidence of any buried A horizon soils present within any of shovel tests or the bucket auger test excavated in this location. The shovel test and bucket angering data coupled with the NRCS soils data suggests a decreased potential for any unidentified buried cultural deposits in this location.

Pipeline ROW

The proposed 3.8-km- (2.4-mi-) long, 10.2-cm (4.0-in.) pipeline ROW parallels an unnamed two-track road that bisects the Handcock property. The proposed survey corridor for the pipeline ROW measures approximately 3.8 km (2.4 mi) in length by approximately 15.2 m (50.0 ft.) in width. From the western terminus of the proposed ROW near the proposed western well pad location, the proposed survey corridor travels west for approximately 0.5 km (0.3 mi) before turning southeast for 1.1 km (0.7 mi) and eventually heading in an easterly direction for the remainder of its length before terminating into the proposed eastern well pad. Along the western portion of the proposed ROW, the corridor shifts from one side of the two-track road to the other in order to avoid impacts to native grasses planted in this location (see Appendix A). Vegetation along the western half of the survey corridor consisted of medium- to tall-height grasses and pine saplings, while the eastern portion of the survey corridor consists of mature pines with a dense understory (Figures 7 and 8).

Shovel tests were excavated at 30.0 m to 50.0-m (98.4 to 164.0-ft.) intervals along the survey corridor. In areas adjacent to previously recorded sites or on distinct landforms with an increased

Figure 4. View of the western well pad location, west.

Figure 5. View of the western well pad location, southeast.

Figure 6. View of standing water on the western well pad location, facing southeast.

potential to contain cultural deposits, shovel test intervals were placed approximately 30.0 m (98.4 ft.) apart, while 50.0-m (164.0-ft.) intervals were utilized in low-lying-areas where the potential for cultural deposits decreases slightly. A total 109 shovel tests and 4 bucket augers were excavated along the proposed pipeline ROW, all of which were negative for cultural resources. Modern trash was observed near the western terminus of the pipeline ROW surrounding shovel test KA-3 (see Appendix A). This debris consisted of Polyvinyl Chloride (PVC) piping fragments, metal fragments, various plastic pieces, wire nails, cable wiring, rubber fragments, and several pull tab beer cans (Figures 9 and 10). This modern trash was likely disturbed during the construction of the Choice Exploration and associated pipeline ROW. Based upon the lack of any diagnostic historic-age cultural materials, this modern trash scatter was not recorded as an archaeological site.

In general, shovel tests revealed approximately up to 1.0 m (3.3 ft.) of gray to dark brown and yellow-brown sand. In some cases, however, compact clay with redoximorphic features or the water table was encountered at shallower depths.

Additionally, four bucket augers (BA-2 to BA-5) were excavated along the proposed pipeline ROW to examine the potential for deeply buried cultural deposits. Specifically, soils within BA-2 exhibited the following soil profile: Stratum I (0-18 cm) consisted of brown (10YR 4/3) lightly saturated sand. Stratum II (18-60 cm) revealed a yellowish-brown (10YR 5/6) sand with rootlet disturbance and an irregular contact with the upper layer. Stratum III (60-110 cm) revealed a yellowish-brown (10YR 5/6) sand with 10 percent very pale brown (10YR 8/2) mottling. Stratum IV (110-175 cm) revealed a yellowish-brown (10YR 5/6) sand with no mottling present. The moisture content within BA-2 increases with depth eventually encountering the water table. The

Figure 7. View of pipeline ROW along western portion of the Project, facing west.

Figure 8. View of proposed pipeline line corridor to the right of the road, facing east.

Figure 9. View of modern trash near KA-3, facing south

Figure 10. View of modern trash along western portion of pipeline ROW.

results of the bucket augers revealed sand overlying the water table. The soil profiles for BA-3 to BA-5 all exhibited a similar profile to that presented in BA-2 (see Appendix B).

Based on available NRCS (2016) soil data, the mapped A horizon in this location extends to a depth of only 13.0 cm (5.1 in.) below surface in these areas. Additionally, there is no evidence of any buried A horizon soils present within the any of shovel tests or bucket auger tests in excavated in this location. The shovel test and bucket angering data coupled with the NRCS soils data suggests a decreased potential for any unidentified buried cultural deposits in this location.

Previously recorded site 41HN59, a historic-age site consisting of a historic-age trash scatter, was observed approximately 6.1 m (20.0 ft.) west of the proposed pipeline ROW. The ground surface was thoroughly inspected as well as shovel tests were excavated at 30.0-m (98.4-ft.) intervals along the Project area near site 41HN59. No evidence of site 41HN59 was observed along the modern ground surface within any of the shovel tests excavated in this area.

Eastern Well Pad Site

The well pad is located along the eastern terminus of the proposed pipeline ROW. The overall dimensions of the proposed well pad measure approximately 97.6 x 182.9 m (320.0 x 600.0 ft.), totaling 4.4 acres in size. The western pad is situated immediately to the east of the convergence of two unnamed two-track roads along the eastern portion of the Hancock property. Vegetation surrounding the eastern proposed well pad location consists of mature planted pines, mixed hardwoods, and a dense understory with heavy leaf litter and very limited ground surface visibility (Figure 11). Some standing water was present within the furrows associated with the planted pine rows (Figure 12).

Figure 11. View of the eastern well pad location, facing north.

Figure 12. Another view of the eastern well pad location, facing east.

Shovel tests were excavated at approximately 30.0-m (98.4-ft.) intervals apart in a grid formation. A total of 28 shovel tests and 2 bucket augers across spread four transects were excavated within the proposed eastern well pad location. Seven shovel tests were located within each transect across this portion of the Project. No cultural resources were observed along the surface or within any of the 28 shovel tests and 2 bucket augers excavated within the proposed western well pad location. In general, shovel tests revealed approximately up to 1.0 m (3.3 ft.) of gray to yellow-brown sand. In some cases, however, compact clay with redoximorphic features or the water table was encountered at shallower depths.

Additionally, two bucket augers (BA-6 and BA-7) were excavated within the proposed eastern well pad location to examine the potential for deeply buried cultural deposits. Specifically, soils within BA-6 exhibited the following soil profile: Stratum I (0-19 cm) consisted of brown (7.5YR 4/2) loamy sand with heavy root and rootlet disturbance present. Stratum II (19-62 cm) revealed a light yellowish-brown (10YR 6/4) loamy sand with rootlet disturbance and an irregular contact with the upper layer. Stratum III (62-71 cm) revealed a yellowish-brown (10YR 5/8) friable, sandy clay with 10 percent clay content. Stratum IV (71-114 cm) revealed a yellowish-red (5YR 5/8) very compact sandy clay. The clay content increases and becomes highly compact with depth. The results of the bucket augers revealed loamy sand overlying dense clays.

Based on available NRCS (2016) soil data, the mapped A horizon in this location extends to a depth of only 10.0 cm (3.9 in.) below surface in these areas. Additionally, there is no evidence of any buried A horizon soils present within the any of shovel tests or bucket auger tests in excavated in this location. The shovel test and bucket angering data coupled with the NRCS soils data suggests a decreased potential for any unidentified buried cultural deposits in this location.

RECOMMENDATIONS

Perennial, on behalf of Upstream, conducted an intensive cultural resources survey of the BP – Fletcher No. 1 well pads and pipeline ROW located east of Lumberton, Texas on the recently acquired Hancock Tract within the Village Creek State Park. The Project will include vegetation clearing, equipment staging as well as construction and installation of the approximately 4.4-acre pad site, 1.5-acre pad site, and a 3.8- km (2.4-mi), 10.2-cm (4.0-in.) pipeline ROW. The pipeline ROW portion of the Project will run adjacent to an unnamed road that bisects the Hancock property from west to east approximately 2.7 km (1.7 mi) east of Alma Drive. The 2 pad sites are located at either terminus of the pipeline ROW and average approximately 1.5 acres and 4.4 acres in size, while the 3.8-km (2.4-mi) pipeline ROW will be installed within an approximately 6.9-m- (20.0-ft.-) wide permanent corridor with temporary workspace extending up to a 15.2-m- (50-ft.-) wide corridor in some areas (14.2 acres). In all, the APE for the Project totals 20.5 acres, with depths of impacts ranging from 1.2 to1.8 m (4.0 to 6.0 ft.). Abby Peyton served as Principal Investigator for the Project, Jennifer Cochran served as Project Archeologist, and Chris Shelton, Amy Goldstein, and Kirsten Atwood conducted the fieldwork on January 27-29, 2016.

The Project is located on property is owned by the TPWD, a political subdivision of the State of Texas. As such, the property falls under the jurisdiction of the ACT. A cultural resources assessment was necessary within the Project in order to satisfy requirements of the ACT. The purpose of the survey was to identify and any prehistoric and historic-age archaeological sites

located within the APE and evaluate their significance and eligibility for designation as a SAL. The cultural resources investigations were conducted under TAC Permit No. 7499.

In all, a total of 144 shovel tests and 7 bucket auger tests were excavated across the Project. Shovel tests revealed diverse soil textures, such as silty clay loam, sandy loam, loamy sand, and sandy clay. Auger testing was terminated upon reaching compact clay or the presence of the water table at 110.0-175.0 cm (43.0-69.0 in.) below ground surface. No evidence of any cultural resources was observed along the modern ground surface or within any of the shovel tests or bucket augers excavated within the Project. The NRCS (2016) soil data available for the Project area coupled with the lack of any evidence of a buried A horizon within the shovel test or bucket auger data suggest a decreased potential for unidentified buried cultural deposits.

Previously recorded site 41HN59, a historic-age site consisting of a historic-age trash scatter, was observed approximately 6.1 m (20.0 ft.) west of the proposed pipeline ROW. The ground surface was thoroughly inspected and shovel tests were excavated at 30.0-m (98.4-ft.) intervals along the Project area near site 41HN59. No evidence of site 41HN59 was observed along the modern ground surface within any of the shovel tests excavated in this area.

Based on the results of the survey effort, no intact, significant cultural resources will be affected by any construction activities within the Project area. In accordance with the ACT, Perennial recommends no further cultural resources investigations within the 20.5-acre Project area. In the unlikely event that unanticipated discoveries are encountered, all work will stop and the TPWD Cultural Resources Program will be contacted immediately. Upstream will retain an archeologist to evaluate the discovery and coordinate with TWPD, and work would not resume until authorized by TPWD.

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APPENDIX A: SURVEY RESULTS MAPS

APPENDIX B: SHOVEL TEST AND BUCKET AUGER DATA